

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Joseph H. Abler

Serial No.: Division of 09/533,717

Filed: Herewith

For: Automated Brine System for Cooling Cheese

PRELIMINARY AMENDMENT

Box No Fee Amendment
Commissioner For Patents
Washington, D.C. 20231

Sir:

Please amend the accompanying divisional patent application as follows:

In the Title:

Replace the title of the application with the following:

-- Liquid Circulation System for Cooling Cheese--

In the Specification:

Replace the first paragraph on page 1 with the following paragraph:

--This application is a division of U.S. patent application serial number
09/533,717 filed on March 23, 2000, which claimed benefit of U.S. Provisional
Patent Application No. 60/184,795 filed February 24, 2000.

Replace the paragraph on page 8, lines 10-26 with the following paragraph:

--The cooling apparatus 10 can be utilized with large blocks of cheese which have a width approximately equal to the width of an entrance 59 into the cooling tank 19. Alternatively smaller blocks that are slightly less than one-half the entrance width can be processed. For this latter version, each side channel 21-24 has a secondary control gate 55 that is operated by a second actuator, such as pneumatic or hydraulic cylinder 57 mounted above the side channel. Beyond the secondary gate 57, the side channel 23 is divided in half longitudinally by a vertical wall 54. The secondary gate 57 directs the smaller cheese blocks into one side of the wall 54 and then into the other side, as will be described. A plurality of second sensors 58 are located between the secondary gates 57 and the entrance 59 of the cooling tank 31-34 and provide sensor signals to the controller 25. The second sensors 58 are of the same design as shown in Figure 2 for the first sensors 26.--

In the Claims:

Cancel claims 1-37.

The following revised claims should be substituted for the like numbered claims that were filed with the patent application.

40. (Amended) The method as recited in claim 39 wherein flowing liquid through the tank comprises:

introducing chilled liquid into a given cooling cell that contains cheese blocks which have been in the tank for substantially the greatest amount of time;

transferring liquid from the given cooling cell into the cooling cell contains cheese blocks which have been in the tank for the next greatest amount of time; and

continuing to transfer liquid successively between each additional pair of cooling cells, wherein the liquid is transferred into one cell of the pair that contains cheese blocks which have been in the tank for a lesser amount of time than the other cell of the pair.

41. (Amended) The method as recited in claim 38 further comprising removing liquid from the section containing cheese blocks that have been in the tank substantially the least amount of time.

Add the following new claims:

42. (NEW) A method for cooling cheese blocks in a tank that is divided by walls into a plurality of cooling cells, said method comprising:

placing a plurality of cheese blocks into different ones of the plurality of cooling cells, wherein the plurality of cooling cells contain cheese blocks at different temperatures;

introducing a liquid into a selected one of the plurality of cooling cells; and

transferring the liquid from the selected one of the plurality of cooling cells to another cooling cell and then sequentially from cooling cell to cooling cell.

43. (New) The method as recited in claim 42 wherein introducing a liquid introduces the liquid into the cooling cell that contains cheese blocks having the lowest temperature.

44. (New) The method as recited in claim 42 wherein transferring the liquid transfers the liquid sequentially from a cooling cell containing cheese blocks that are colder than cheese blocks in a cooling cell into which the liquid is entering.

45. (New) The method as recited in claim 42 further comprising chilling the liquid prior to introduction into the tank.

46. (New) An apparatus for cooling cheese blocks, said apparatus comprising:
a tank to contain a liquid and the cheese blocks, the tank being divided into a plurality of cooling cells separated from each other by walls, and wherein each cooling cell has a fluid inlet;

a fluid circulation system is connected to each fluid inlet to introduce the liquid into a selected one of the plurality of cooling cells; and

a mechanism which transfers the liquid from cooling cell to cooling cell in a predefined sequence.

47. (New) The apparatus as recited in claim 46 wherein the mechanism comprises a plurality of inter-cell pumps each connected to the tank to transfer the liquid between a different pair of the plurality of cooling cells.

48. (New) The apparatus as recited in claim 46 wherein the fluid circulation system comprises a heat exchanger for cooling the liquid.

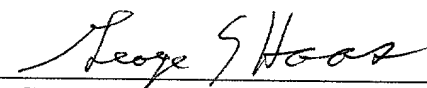
49. (New) The apparatus as recited in claim 48 wherein the fluid circulation system comprises a distribution conduit which receives liquid that has been cooled by the heat exchanger; and a plurality of valves connecting the distribution conduit to the plurality of cooling cells, wherein opening one of the plurality of valves introduces the liquid into the selected one of the plurality of cooling cells.

REMARKS

The present amendment cancels claims that were elected for prosecution in the parent application of this divisional application. Typographical errors in the specification are corrected and additional claims are being presented

Respectfully submitted,
Joseph H. Abler

Dated: August 14, 2001

By: 
George E. Haas
Registration No. 27,642

Quarles & Brady LLP
411 E. Wisconsin Avenue
Milwaukee, WI 53202-4497
(414) 277-5000

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VERSION OF CLAIMS WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

Replace the first paragraph on page 1 with the following paragraph:

--This application is a division of U.S. patent application serial number 09/533,717 filed on March 23, 2000, which claimed [claims] benefit of U.S. Provisional Patent Application No. 60/184,795 filed February 24, 2000.

Paragraph on page 8, lines 10-26:

--The cooling apparatus [18] 10 can be utilized with large blocks of cheese which have a width approximately equal to the width of an entrance 59 into the cooling tank 19. Alternatively smaller blocks that are slightly less than one-half the entrance width can be processed. For this latter version, each side channel 21-24 has a secondary control gate 55 that is operated by a second actuator, such as pneumatic or hydraulic cylinder 57 mounted above the side channel. Beyond the secondary gate 57, the side channel 23 is divided in half longitudinally by a vertical

wall 54. The secondary gate 57 directs the smaller cheese blocks into one side of the wall 54 and then into the other side, as will be described. A plurality of second sensors 58 are located between the secondary gates 57 and the entrance 59 of the cooling tank 31-34 and provide sensor signals to the controller 25. The second sensors 58 are of the same design as shown in Figure 2 for the first sensors 26.--

In the Claims:

40. (Amended) The method as recited in claim [38] 39 wherein flowing liquid through the tank comprises:

introducing chilled liquid into a given cooling cell that contains cheese blocks which have been in the tank for substantially the greatest amount of time;

transferring liquid from the given cooling cell into the cooling cell contains cheese blocks which have been in the tank for the next greatest amount of time; and

continuing to transfer liquid successively between [a] each additional pair of cooling cells, wherein the liquid is transferred into one cell of the pair that contains cheese blocks which have been in the tank for a lesser amount of time than the other cell of the pair.

41. (Amended) The method as recited in claim 38 further comprising removing liquid from the [cooling cell] section containing cheese blocks that have been in the tank substantially the least amount of time.

42. (NEW) A method for cooling cheese blocks in a tank that is divided by walls into a plurality of cooling cells, said method comprising:

placing a plurality of cheese blocks into different ones of the plurality of cooling cells, wherein the plurality of cooling cells contain cheese blocks at different temperatures;

introducing a liquid into a selected one of the plurality of cooling cells; and

transferring the liquid from the selected one of the plurality of cooling cells to another cooling cell and then sequentially from cooling cell to cooling cell.

43. (New) The method as recited in claim 42 wherein introducing a liquid introduces the liquid into the cooling cell that contains cheese blocks having the lowest temperature.

44. (New) The method as recited in claim 42 wherein transferring the liquid transfers the liquid sequentially from a cooling cell containing cheese blocks that are colder than cheese blocks in a cooling cell into which the liquid is entering.

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46. (New) An apparatus for cooling cheese blocks, said apparatus comprising:
a tank to contain a liquid and the cheese blocks, the tank being divided into a plurality of cooling cells separated from each other by walls wherein each cooling cells has a fluid inlet;

a fluid circulation system is connected to each fluid inlet to introduce the liquid into a selected one of the plurality of cooling cells; and

a mechanism which transfers the liquid from cooling cell to cooling cell in a predefined sequence.

47. (New) The apparatus as recited in claim 46 wherein the mechanism comprises a plurality of inter-cell pumps each connected to the tank to transfer the liquid between a different pair of the plurality of cooling cells.

48. (New) The apparatus as recited in claim 46 wherein the fluid circulation system comprises a heat exchanger for cooling the liquid.

49. (New) The apparatus as recited in claim 48 wherein the fluid circulation system comprises a distribution conduit which receives liquid that has been cooled by the heat exchanger; and a plurality of valves connecting the distribution conduit to the plurality of cooling cells wherein opening one of the plurality of valves introduces the liquid into the selected one of the plurality of cooling cells.